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Managing habitat for eastern
bluebirds

PENNSYLVANIA WILDLIFE NO. 3

Managing Habitat for Eastern Bluebirds

Bluebirds are one of Pennsylvania's most beloved songbirds. No matter how often you see that flash of blue, it remains an exhilarating experience, and a bluebird nesting on your property is a highlight of spring. Preferring open country, bluebirds were rare in Pennsylvania before the 1900s, when forests covered most of the state. Bluebirds increased in number as forests were cut in the early 1900s but declined sharply in the mid-1900s because of the widespread use of pesticides and competition for nest sites from house sparrows and starlings. Today, bluebirds have made a significant comeback primarily because of the management activities of landowners across the state.

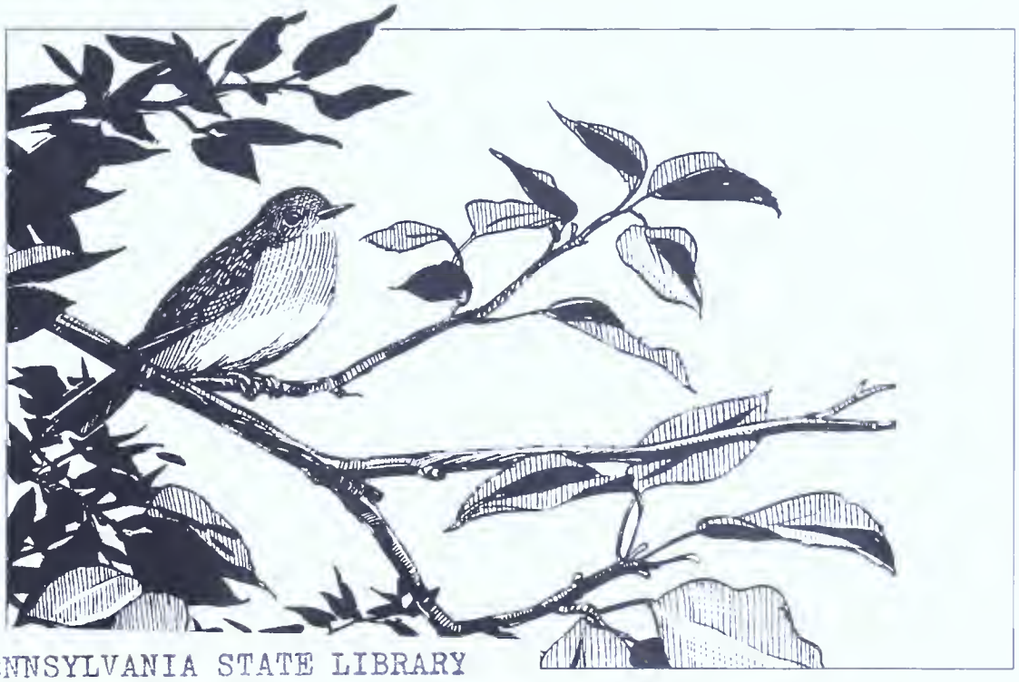
General Biology

Some eastern bluebirds are year-round residents in Pennsylvania, but the majority migrate south in the winter, returning to Pennsylvania in early March. The first birds to arrive are males, with females arriving a short time later. Adults often return to the same territories where they previously bred, and young from the previous year return to breed near the area where they were hatched.

Soon after arriving, bluebirds begin to look for suitable nesting sites. Pairs begin breeding in early April. The female lays three to six pale blue eggs, which she incubates. The eggs hatch within 12 to 14 days, and the young are fed in the nest by both the male and the female for 15 to 20 days. The adults feed the young out of the nest for another 10 days before the young are on their own. Most adults will raise two broods in a season.

Habitat Requirements

During the breeding season, bluebirds use a variety of habitats, including open fields with scattered trees, farmlands, forest edges, swamps, sparsely inhabited residential areas, roadsides, fencelines, orchards, and clearings created by fire and logging. In the winter, they use grasslands, shrublands, and forest edges. Bluebirds defend nesting territories 2.5 to 7 acres in size. They require cavities for nesting and abundant perches for feeding and resting.



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Cover
Bluebirds nest in natural cavities and nest boxes. Nests are usually 5 to 12 feet above the ground, but have been found as high as 20 feet. Because people have removed cavity trees from many habitats, suitable nest sites often limit the number of bluebirds in an area. In addition, many other cavity nesting species, including the European starling, house sparrow, tree swallow, and house wren, compete with bluebirds for the limited number of natural nesting cavities available. Bluebirds that overwinter in the region, rather than migrate, require weather-tight roosting sites and use both natural cavities and nest boxes.

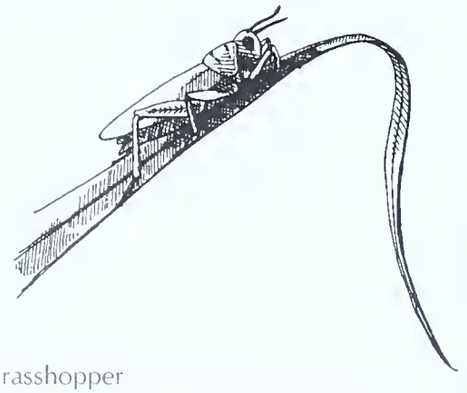
Food
Insects, including grasshoppers, crickets, beetles, and caterpillars, make up 68 percent of a bluebird's diet, while the remaining 32 percent is fruit. Bluebirds gather insects from leaves, branches, and the ground. They also catch insects in the air by hunting from perches, a technique known as "hawking." The lack of perches in the interiors of open habitats may restrict bluebird use to the edges, where perches are more abundant.

Water
Bluebirds are attracted to shallow water for bathing if perches are located nearby. They prefer water that is less than 2 inches deep. They also are attracted to dripping water.

Management Practices

The goal of eastern bluebird habitat management is to create and maintain suitable food and cover resources. Since the lack of nest sites and perches is the factor that often limits bluebird populations in an area, management practices such as the following may be used to increase the availability of these resources.

■ *Maintain open habitat conditions.*
Bluebirds prefer open habitats and rarely are found in forested or dense brushy areas. Open habitats that are left unmanaged for several years will become unsuitable for bluebirds as woody vegetation invades the site. This process, called succession, eventually will result in loss of bluebird habitat unless action is taken to retain the grassy/herbaceous sites that bluebirds prefer. Grassy fields can be mowed annually to prevent the invasion of woody plants. Other methods of controlling woody vegetation include brush chopping (towing a heavy-duty rotary mower behind a tractor), roller beating (towing a rolling drum with sharp metal blades attached to it behind a bulldozer), and chaining (knocking down vegetation with a heavy chain stretched between two bulldozers). If woody plants become established in an area, these methods can be used every three to five years to reduce their numbers. All vegetation management activities should be conducted late in the growing season to minimize the disturbance to bluebirds and other wildlife species using open habitats.



Grasshopper

■ *Provide perches in open habitats.*
Because bluebirds often hunt from and display on perches, adding perch sites to open habitats with few existing perches can improve habitat quality. Natural perches are abundant along the edges of large open areas, such as clearcuts, pastures, and fields, but the interiors of these spaces often lack perches. Artificial perches, such as garden stakes, fence posts, or tree limbs stuck into the ground, can be installed in open areas. Scattered shrubs also can be planted to serve as perches. Adding perches also increases the amount of available foraging habitat. To prevent avian predators, such as hawks, from ambushing bluebirds as they enter or leave the nest, do not locate perches too close to nest boxes, and never put perches on nest boxes.

■ *Retain snags and trees in clear-cuts.*
In areas where clear-cuts are planned for timber management, retain snags and "wildlife trees" (including cavity trees, conifers, and mast-producing species) throughout the cut to provide nest sites, perches, and food for bluebirds. Consult a natural resource professional to plan the retention of wildlife trees in clear-cuts so they will not blow down in heavy winds and so the area remains safe for loggers.

Bluebirds often use clear-cuts as nesting and feeding sites, and may nest in cavities in snags or in trees left standing on a clear-cut for 12 or more years following a timber harvest. After that period of time, shrubs close in and reduce the amount of open herbaceous groundcover that is the preferred feeding habitat of bluebirds. Periodic maintenance of the area (such as brush chopping or disking) to reduce the amount of shrubby cover may be needed to maintain suitable bluebird habitat. In areas being managed for timber harvests, old clear-cuts can be allowed to grow into forests, and new clear-cuts can be made every 10 years or so to ensure that bluebird habitat is continuously available. The new clear-cuts should be adjacent to the old cuts to ensure that bluebirds will find and use them more easily and to retain some large blocks of forest for wildlife species that prefer mature forest habitats.

■ *Use covers on tree shelter tubes.*
Foresters sometimes recommend using shelter tubes to protect tree seedlings planted after a timber harvest. The tubes allow sunlight and water to reach the seedlings while protecting them from browsing by deer and rabbits. Unfortunately, these tubes can be hazardous to bluebirds, which may fly down into them to catch insects and be unable to fly back out. A simple solution to this problem is to put netting or mesh screening over the tops of the tubes to prevent bluebirds from entering them.

■ *Install and maintain nest boxes.*
Bluebird nest boxes have been used in many areas to increase the availability of suitable nest sites. They are easy to make, and building boxes is an enjoyable activity for people of all ages. One design

for a bluebird box appears at right. The Pennsylvania Game Commission and the North American Bluebird Society provide detailed plans for building, installing, and maintaining nest boxes (see Sources of Additional Information).

Proper installation of the box will help minimize the risk of predation. If possible, mount the box on a fence post or a pole made from 8-foot sections of 3/4-inch (inside diameter) galvanized pipe. Sink the pole 2 feet into the ground and mount the box on the pole 4 to 6 feet above the ground and facing away from the prevailing winds. Attach a predator baffle to the pole below the box. Predator baffles usually are conical structures placed beneath the box to keep animals like snakes, raccoons, and skunks from climbing up to the box. A simple baffle can be made by encircling the pole with a 2-foot-wide collar of metal 3 feet off the ground. Because bluebirds are territorial and will not allow other bluebirds to nest close to them, locate nest boxes at least 100 yards apart (but see next paragraph).

Mounting nest boxes on poles instead of trees enables you to place them in locations that will decrease the chance that they will be used by birds other than bluebirds. To reduce competition from house wrens, which prefer to nest near brushy cover, locate boxes at least 100 feet from treelines and shrubs. If wrens nest in the boxes, do not harass them to try to make them leave. Not only are they protected by law, as are all native species, but they also may respond to harassment by destroying other nearby nests. If tree swallows use the boxes, put up boxes in pairs 15 to 25 feet apart. The swallows will defend both boxes from other swallows, but will tolerate the presence of bluebirds in the second box.

If starlings or house sparrows use the boxes, you may remove their nests, because they are non-native species and are not protected by law. House sparrows and starlings will try to rebuild their nests several times, so it is likely that you will need to watch these boxes and periodically remove new nesting materials. Prevent starlings from using boxes by making the entrance hole less than 1-9/16

Bluebird Box Design

Whether you buy or build your own bluebird box, there are several points to consider.

Material: Wood, 3/4 inch or more thick, provides the best insulation from heat and cold. Exterior plywood won't warp or split. Other wood should be protected from the weather.

Preparation: Light, neutral colors of paint, stain, or clear sealer may be applied on outside of box only, and allowed to dry and air thoroughly. Pressure-treated wood contains copper arsenate and should not be used. Metal flashing tacked over cut ends of back and roof seam prevents water entry. Nails or screws, not staples, should be used to hold the box together.

Access: Side or front should swing open for monitoring and cleaning, and should be secured at bottom with a screw to prevent tampering. Top-opening boxes are hard to clean and must be mounted too low to be safe from predators.

Dimensions: Entry hole should be 1 1/2 inches for eastern bluebirds. Floor: 4 1/2 to 5 1/2 inches square. The floor should be 8 inches below the entry hole. Perches are favored by house sparrows and should be avoided.

Roof: Should be slanted, with back higher than front, and overhanging 2 inches or more to keep rain and sun out of entry hole.

Interior: Inside of front should be deeply scored below hole to give toehold to emerging birds.

Ventilation/Drainage: Drill holes or gaps on top of two sides for cross-ventilation. You should seal the holes with flexible weatherstripping in cold weather; this should be removed once the weather warms.

Floor: Should be recessed and completely covered by the sides and front of the box. Rain will seep into the seams of a floor nailed flush to the box sides.

Predator baffle: Can be made by encircling the pole with a 2 foot-wide collar of sheet metal 3 feet off the ground.

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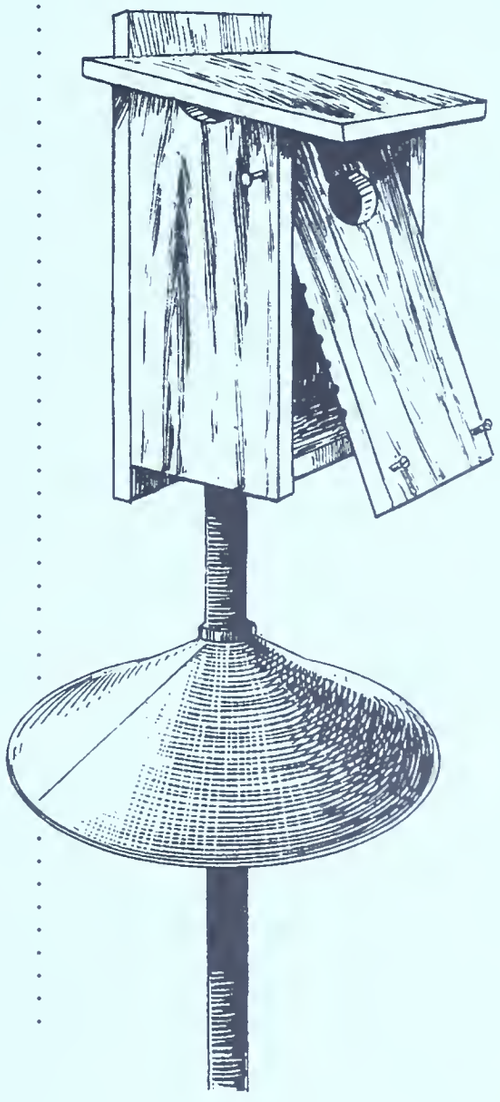

inches in diameter. House sparrows are smaller than bluebirds, so they cannot be physically excluded from the boxes. Some evidence suggests that house sparrows are less likely to nest in boxes mounted low on a pole (below 5 feet). House sparrows often are found in residential areas and where animals are fed grain, so do not locate nest boxes near such areas. Chickadees, titmice, nuthatches, woodpeckers, wrens, and flycatchers also might use bluebird nest boxes.

To attract migrating bluebirds, prepare the boxes for use by February. Leave them up year-round, since overwintering bluebirds use them for roosting. To ensure that they are weather-tight and clean, open the boxes after each nesting season and remove all nesting materials. Leave the boxes open for several days in good weather to air them out and dry them, if necessary. This will help reduce problems with insect infestations. Do not use pesticides in the boxes.

■ *Provide water for bathing.*
Bluebirds are attracted to shallow water for bathing. They prefer water that is less than 2 inches deep. Place flat rocks at varying water depths to provide secure footing and allow bluebirds to select the depths that they prefer. Bluebirds also are attracted to dripping water. Commercial drippers are available, but a garden hose hung over a bird bath also will work. Bluebirds are more likely to use water that has perches nearby. Locate water sources near existing perches, or plant shrubs and trees near the water source.

Dogwood branch with fruit

■ *Plant fruiting trees and shrubs.*
Bluebirds rely on fruit for more than 30 percent of their diet. In the winter, they depend on persistent fruits more than at any other time of year. Tree and shrub species that provide fruit include black cherry, serviceberry, sumac, dogwood, grape, honeysuckle, bittersweet, viburnum, greenbrier, American holly, mountain ash, spice bush, and pokeweed. Planting these and other trees and shrubs that retain their fruit through the winter, or encouraging the growth of such trees and shrubs already present on the site, increases the quality of year-round habitat.

■ *Minimize the use of pesticides.*
Bluebirds are very susceptible to pesticides, which are thought to be one of the main causes of their historic population declines. Insecticides reduce the amount of food (insects) available to bluebirds. In addition, many insecticides and herbicides are toxic to bluebirds, especially young nestlings. Therefore, minimize the amount of pesticides used in bluebird habitats.

Sources of Additional Information

Additional information about bluebirds and their management, including plans for building nest boxes, can be obtained from The North American Bluebird Society, Box 6295, Silver Spring, MD 20916-6295. Telephone: (301) 384-2798.

Woodworking for Wildlife is a comprehensive book about building and installing artificial nesting structures. It includes 26 plans for nest boxes (including bluebird boxes) and other nesting structures, as well as information about selecting the proper habitat for the boxes, placing them correctly within the habitat, and choosing the correct height. A copy of *Woodworking for Wildlife* can be ordered for $3.00 from the Pennsylvania Game Commission, 2001 Elmerton Ave., Harrisburg, PA 17110-9797.

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